

Low cost small size (2:1) / (4:1) wide voltage input isolation voltage regulator self-recovery overload short circuit protection output DC-DC Converter

Wide range voltage value **DWS 2 (2:1)** or **DWS 4 (4:1)** input, the DC-DC Converter of DWS series with the 8pin single row (SIP8 Pin) and in line package, it provides accurate output voltage stability and long term self-recovery overload protection and short-circuit protection. When the load changes, the output voltage value changes a little and does not rise above the rated design voltage. Especially for a variety of vehicle equipment, battery power, analog power, CAN bus, RS485, Ethernet Internet of Things RJ45 remote communication interface power supply etc provides reliable power isolation design. The product can effectively isolate the ground loop interference, suppress the communication interface interference and enhance the anti-static protection function of the communication interface. It is widely used in electric vehicles, computer remote control, industrial automation equipment, robots, CNC machine tools, national grid, smart home, medical instruments, Power meters, security data collection and control industries.

Input characteristics:

Wide range voltage value input: **DWS 2(2:1) or DWS 4(4:1)**

Input voltage nominal value and voltage range:

DWS 2: (2:1) Wide range voltage value input: **5VDC(4.5-9V), 12VDC(9-18V), 24VDC(18-36V)**.

DWS 4: (4:1) Wide range voltage value input: **24VDC(9-36VDC), 48VDC(18-72VDC)**.

Filtering: Built-in tantalum capacitor 4.7uF ~22uF

Output Characteristics:

Output power rating: 1W; 2W; 3W

Single output (DWBS) Common voltage value: 5, 9, 12, 15, 24VDC; model: DWB_{xxxx}S-1W/2W/3W

Dual output (DWAS) Common voltage value: (+/-)5, 9, 12, 15, 24VDC; model: DWA_{xxxx}S-1W/2W/3W

If you have other specifications, please contact Sunyuan Technology Co., Ltd.

Package characteristics:

Packaging way: SIP8 Pin (Single row 8 pin) straight

Insert package material: resin

Packaging size: 22.0×9.5×12.0 mm

Electrical characteristics:

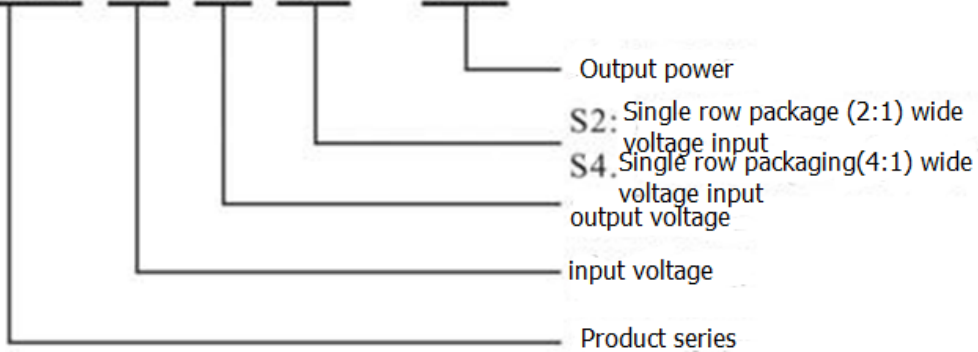
The following data were measured at TA = 25 °C, nominal input voltage, and rated output current unless otherwise stated.

Project	Test Conditions	Minimum	typical	Maximum	Unit
Output power		0.2		3	W
Output positive voltage accuracy			±1	±2	%
Output negative voltage accuracy			±2	±3	
Linear voltage regulation	Input voltage varies ±1% at rated load		±0.2	±0.5	
Load regulation rate	Load from 10% to 100% under nominal input		±0.5	±1	
Temperature drift coefficient	Under rated load			±0.03	%/°C
Ripple & noise	Bandwidth 20MHz, using parallel line method		25	75	mVp-p
On-off level	Rated input voltage	100			KHz
Insulation resistance	500VDC	1000			MΩ
Isolation voltage	Test time 1 minute, leakage current less than 1mA	1500			VDC
Storage humidity	No condensation	5		95	%
Operating		-40		85	

temperature					°C
storage temperature		-55		125	
Shell temperature rise during work			25	35	
Pin resistance to soldering temperature	Solder joints are 1.5 mm from the housing and operate for 10 seconds			300	
Size	22.00× 9.50× 12.00 mm (0.866 × 0.374 × 0.473 inc)				
Output short circuit protection	Continuous short circuit protection (self-recovery)				
cooling method	Natural air cooling				
shell material	Flame retardant heat resistant plastic (UL94-V0)				

Model Selection:

DWB 24 05 S□ -1W



Model Selection:

Product selection example

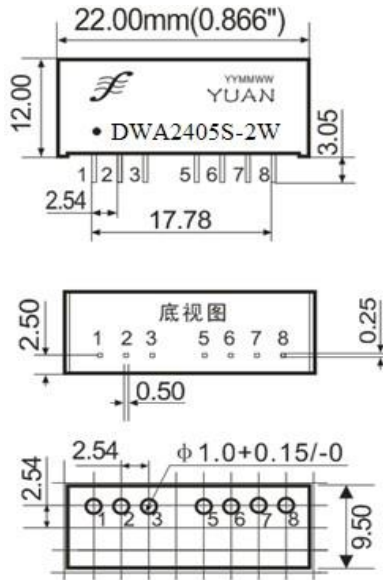
Model number	Input rated voltage		Output rated voltage and current				effectiveness Typical value %	Number of output channels
	Nominal	Range	Voltage (V)	Current				
				1W(mA)	2W(mA)	3W(mA)		
DWB1205S2-XW	12V	9-18V	5	200	400	600	77	1
DWB1209S2-XW			9	111	222	333	80	1
DWB1212S2-XW			1 2	83	167	250	80	1
DWB1215S2-XW			1 5	67	133	200	82	1
DWB1224S2-XW			2 4	42	83	125	83	1
DWA2405S2-XW	24V	18-36V	±5	±100	±200	±300	78	2
DWA2409S2-XW			±9	±55	±111	±167	79	2
DWA2412S2-XW			±1 2	±42	±83	±125	80	2
DWA2415S2-XW			±1 5	±33	±67	±100	81	2
DWA2424S2-XW			±2 4	±21	±42	±63	82	2
DWB2405S4-XW	24V	9-36V	5	200	400	600	77	1
DWB2409S4-XW			9	111	222	333	80	1
DWB2412S4-XW			1 2	83	167	250	80	1
DWB2415S4-XW			1 5	67	133	200	82	1
DWB2424S4-XW			2 4	42	83	125	83	1
DWA4805S4-XW	48V	18-72V	±5	±100	±200	±300	77	2
DWA4809S4-XW			±9	±55	±111	±167	79	2
DWA4812S4-XW			±1 2	±42	±83	±125	81	2
DWA4815S4-XW			±1 5	±33	±67	±100	81	2
DWA4824S4-XW			±2 4	±21	±42	±63	82	2

Remark: XW represents 1W, 2W, 3W output power

Dimensions and pin function description

Dual Output DWAS and Single Output DWBS Product Dimensions and Pin Definitions (Unit: mm)

Remark: Pin 3 is the control pin and is active high. When the third pin and the single pin function of the single output are not used, they cannot be connected to other pins or circuits. Please keep them floating.



Pin function		
PIN	Single output DWBS	Dual output DWAS
1	GND input Ground	GND input Ground
2	Vin Input positive	Vin Input positive
3	CTRL Control foot	CTRL Control foot
5	NC Empty foot	NC Empty foot
6	+Vo Positive output	+Vo Positive output
7	0V input Ground	0V input Ground
8	CS Ripple observation foot	-Vo Negative output

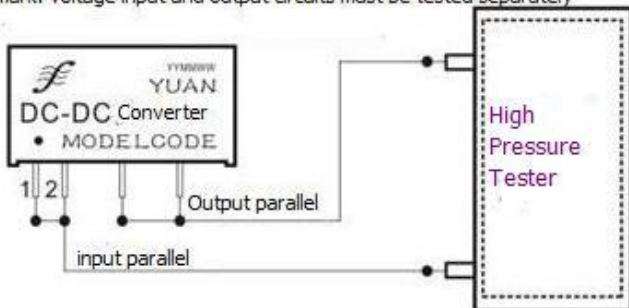
Bellow data you can reference :

一、DC-DC Converter / ISO series power isolation amplifier isolation high voltage detection method

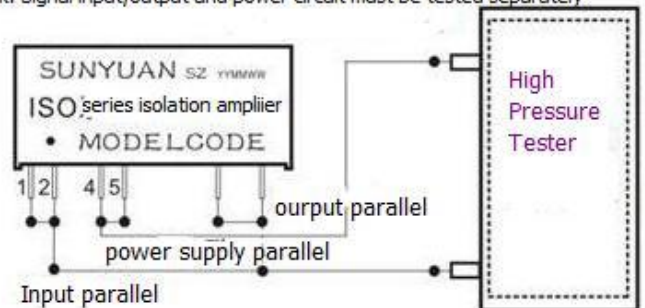
The product isolation test uses a 6KV high voltage tester. The DC-DC module power supply detection input and output are isolated from each other. The power isolation amplifier products detect the three-terminal isolation of the signal input, output and auxiliary power supply. As shown in the figure: Please pay attention to the safety of electric shock when testing! Each pin in each loop, such as the input terminal and the auxiliary power supply terminal, must be connected in parallel and measured. In order to avoid irreparable damage to the product due to high voltage discharge.

Test conditions: Greenhouse TA=25 degrees Celsius, temperature less than 75%, set the rated high pressure value according to the product isolation voltage specification.

Remark: Voltage input and output circuits must be tested separately



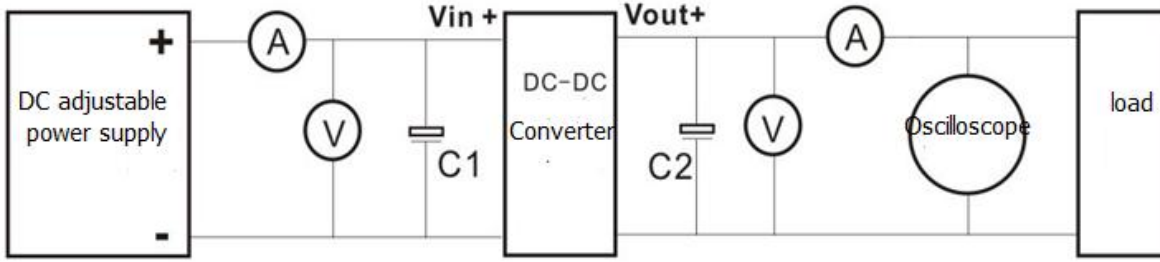
Remark: Signal input/output and power circuit must be tested separately



二、the main parameters of the power module product detection method:

Adapt the standard Kelvin four-terminal input and rated load test (pictured)

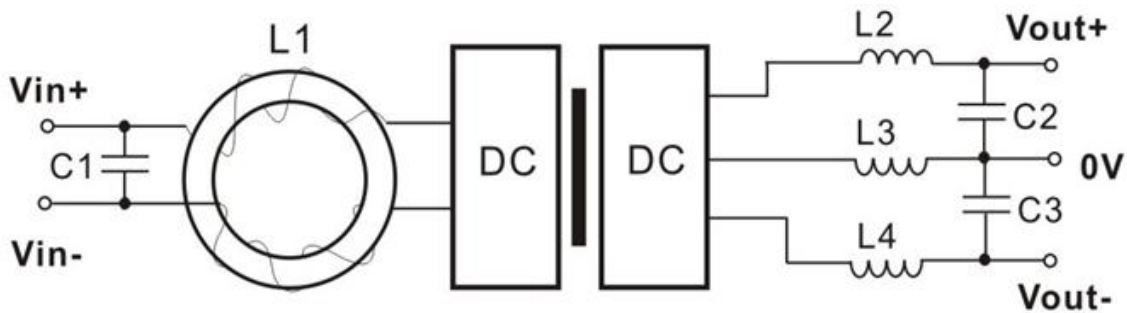
Test conditions: greenhouse TA = 25 degrees Celsius, temperature less than 75% nominal input and rated load.



三、Reference method for reducing noise common-mode interference in DC-DC module power supply use

The module power supply will generate common and differential mode noise when operating at the switching frequency. The method of reducing ripple and noise is to add a passive LC or RC (large loss) filter network to the input and output. The self-resonant frequency of L is much higher than the switching frequency of the module, and the current value allowed to pass is also preferably selected to be more than twice the maximum input current of the module, and the internal resistance is smaller to reduce the DC loss.

For fixed frequency modules, the filter network parameters can be calculated. Generally, the differential mode noise is very small, only need to connect the external L1 (total touch choke), which can meet the requirements (see below).



四、Due to the existing filter circuit inside the product, the output filter capacitor value should be appropriate. The output capacitor is too large, which may cause startup problems. For each output, the maximum capacitance of the filter capacitor should not exceed 10uF under the condition of ensuring safe and reliable operation. Generally recommended is 4.7uF, if you need to obtain very low For the ripple value, an inductor can be connected in series with the input of the DC-DC converter. At this time, the capacitance of the output filter capacitor should not be too large.